

**U.S. CENSUS BUREAU ADVISORY COMMITTEES**  
**Implementing Differential Privacy for the 2020 Census Data Products**  
**National Advisory Committee**  
**Census Scientific Advisory Committee**  
**Separate working groups will be established, but will work collaboratively**  
**Approved on February 27, 2020**

**Implementing Differential Privacy for the 2020 Census Data Products Working Group**

**Working Group Extension through December 2022:** Approved April 22, 2021

**Extension Justification:**

The COVID-19 pandemic significantly delayed 2020 Census operations and the schedule for releasing 2020 Census data products was revised accordingly. To continue engaging in discussions with the NAC CSAC Differential Privacy Working Group, and to receive their assessments and recommendations on not only the redistricting data, but all 2020 Census data products, the Census Bureau is extending the Working Group's guidelines from July 31, 2021 to December 31, 2022.

**Working Group Member Changes:** Approved June 24, 2021

**NAC Working Group Members**

- Convener (selected from members): Carol Hafford
- Members:
  1. Taeku Lee
  2. Seth Sanders
  3. Thomas Saenz
  4. James Tucker
  5. Nicole Borromeo
  6. D'Lane Compton
  7. Julio Guity-Guevara
  8. Karthick Ramakrishnan
  9. John Sandoval
  10. Richard Chang

**Working Group Member Changes:** Approved August 26, 2021

**CSAC Working Group Members**

- Convener (selected from members): Richelle Winkler
- Members:
  1. Deborah Balk
  2. John Czajka
  3. Barbara Entwisle
  4. Kunal Talwar
  5. Lance Waller

## **Working Group Member Changes:** Approved April 27, 2022

### **CSAC Working Group Members**

- Convener (selected from members): Richelle Winkler
- Members:
  1. Claire Bowen
  2. John Czajka
  3. Barbara Entwisle
  4. Ronald Prevost
  5. Kunal Talwar
  6. Lance Waller

### **Overview**

The U.S. Census Bureau is transitioning to a modern disclosure avoidance system based on differential privacy. This will include reducing the amount of data that will be produced for the public after the 2020 Census, compared with previous censuses. The new disclosure avoidance methodology also allows for the accuracy of some data tables to be prioritized over others in order to maintain a level of accuracy required to meet the needs of established use cases. Overall, the reduction in published data and the prioritizing of accuracy will help to realize a balance of accuracy for many statistics while also improving the protection of respondents' confidentiality.

Work on the transition to a modern disclosure avoidance system has proceeded along two lines. The first included the development of a primary disclosure avoidance system designed specifically to produce the PL94-171 (redistricting data), the Demographic Profiles, and the demographic and housing characteristics data files. For other 2020 Census data products, including tables for detailed race, Hispanic origin, and tables requiring person/household joins, a secondary system is being developed that will also be based on differential privacy. Because of their level of detail, these tables pose difficult and unique privacy challenges.

Over the past year, Census Bureau researchers and leaders have conducted outreach with multitudes of data users to determine which decennial data products, specific tables, and levels of geography are used by the public, as well as how they are used. Obtaining this feedback was critical for identifying use cases and creating draft proposals for 2020 Census data products. This critical work was undertaken with the purpose of producing 2020 Census data products to meet the widest range of needs of census data users as possible. This outreach is ongoing, and additional engagement with the Census Bureau's advisory committees is needed to help design a suite of 2020 Census data products that will meet programmatic, legal, or statistical requirements.

### **Working Group Focus**

To support the Census Bureau's efforts to address the issue outlined above, including work on both the primary and secondary disclosure avoidance systems, the Census Bureau Director is establishing working groups for the National Advisory Committee (NAC) and the Census Scientific Advisory Committee (CSAC). Independent NAC and CSAC "Implementing Differential Privacy for

the 2020 Census Data Products” working groups will develop separate recommendations, but will work collaboratively, and will each produce the deliverables described below. The working groups will assist with the main tasks, described below.

**Task 1. Developing a summary of use cases.**

- Review the use cases collected via the Census Bureau's Federal Register Notice, the National Academy of Science's workshop on differential privacy, and from feedback received on the 2010 Demonstration Data Product.
- Develop and carry out strategies for identifying additional use cases, including use cases for detailed race and Hispanic origin data and tables requiring person/household joins.
- Help determine how the components of the disclosure avoidance algorithms affect accuracy, and how they are influenced by the allocation of privacy-loss budget to specific use cases. Privacy-loss budget refers specifically to the differentially private (DP) mechanisms implemented in the 2020 Disclosure Avoidance System (DAS). Other algorithmic components include how the geographic hierarchy is managed, and statistical post-processing to produce tabular outputs.

**Task 2. Developing recommendations for prioritizing use cases for the administration of a "privacy-loss budget."**

- Provide recommendations for data tables that should receive a greater allocation of the privacy-loss budget or algorithmic adjustments to improve accuracy without additional privacy-loss budget.
- Provide recommendations for potentially revising the demographic detail or level of geography for 2020 data product tables, including for detailed race and Hispanic origin tables, and tables requiring person/household joins.

**Task 3. Developing metrics to assess the impact of differential privacy on the accuracy of decennial census data.**

- Provide recommendations for metrics that can be associated with specific use cases and used to assess the impact of the disclosure avoidance system, including the differential privacy and other algorithmic components, on the accuracy of decennial census data products.

**Task 4. Developing strategies for communicating the use of differential privacy for the 2020 Census data products.**

- Provide recommendations for messaging and communication strategies for informing data users, of all skill levels, about what differential privacy is, the data protection it provides, the privacy/accuracy tradeoff, and the strengths and limitations of the 2020 Census data products.

**Implementing Differential Privacy Working Group Meetings and Members**

- The working groups will exist through **July of 2021**.
- Working group membership will consist of advisory committee members selected by the NAC Chair and the CSAC Chair.

- The NAC working group and the CSAC working group will each have a member designated as the Convener. The Convener will be selected by the Census Bureau Director in consultation with the NAC Chair and CSAC Chair.
- Working group conference calls will occur bi-weekly. Additional calls may occur in order to meet critical needs, as appropriate. The working group will send meeting notices and prepare minutes for each conference call.
- Census Bureau Subject Matter Experts (SMEs) will provide background information to address specific work tasks and needs as they pertain to the working group's guidelines. SMEs also will participate in bi-weekly working group conference calls, as necessary.
- The working group Convener is responsible for leading conference calls with working group members and facilitating the development of four working group presentations for future NAC and CSAC meetings.
- The working group may develop a list of additional experts to assist the working group as consultants.

### **Working Group Deliverables**

Each working group will develop and present four presentations for their corresponding advisory committee. The working group's presentations will be delivered and presented at their corresponding NAC and CSAC full membership meetings.

#### **Presentation 1: Summary of Use Cases Pertaining to 2020 Census Data**

This presentation will provide a summary of use cases for 2020 Census data and the challenges with producing the data and implementing differential privacy for the 2020 Census data products. The working group will present a summary of their review of use cases collected via the Census Bureau's Federal Register Notice, the National Academy of Science's workshop on differential privacy, and additional information collected by the working group. The presentation will include a summary of the review of literature pertaining to the implementation of differential privacy for the 2020 Census and the currently proposed 2020 data products. Finally, each working group will present a list of challenges related to this issue and discuss the implications for meeting or not meeting these challenges.

#### **Presentation 2: Assessing Priority of Use Cases for Allocation of "Privacy-Loss Budget" and Adjustment of the Statistical Processing Algorithms**

This presentation will provide recommendations on the priority of use cases for the Census Bureau's administration of the 2020 Census data "privacy-loss budget and adjustments of the other algorithmic components." Each working group will present their recommendations for data tables that should receive a greater allocation of the privacy-loss budget and/or adjustment of other algorithmic components. Each working group will present recommendations on demographic or geographic detail that could be revised for 2020 data product tables.

#### **Presentation 3: Metrics for Assessing the Impact of the 2020 Disclosure Avoidance System on Data Accuracy**

This presentation will provide recommendations for metrics associated with specific use cases that can be used to assess the impact of the 2020 DAS, both the differential privacy and the other

algorithmic components, on the accuracy of decennial census data.

#### **Presentation 4: Communicating about Differential Privacy in the 2020 Census Data Products**

This presentation provides recommendations for messaging and communication strategies for informing data users, of all skill levels, about what differential privacy is, how the specific disclosure avoidance algorithms implemented in the 2020 DAS work, the data protection the 2020 DAS provides, the privacy/accuracy tradeoff, and the strengths and limitations of the 2020 Census data products.

#### **References and Related Census Bureau Publications**

- To be developed

#### **NAC Working Group Members**

- Convener (selected from members): Mr. Thomas Saenz
- Members:
  1. Dr. Taeku Lee
  2. Dr. Seth Sanders
  3. Dr. Carol Hafford
  4. Dr. James Tucker
  5. Ms. Nicole Borroneo

#### **CSAC Working Group Members**

- Convener (selected from members): Dr. F. Jay Breidt
- Members:
  1. Dr. Deborah Balk
  2. Dr. John Czajka
  3. Ms. Kathryn L.S. Pettit
  4. Mr. Kunal Talwar
  5. Dr. Richelle Winkler
  6. Mr. Joe Whitley

#### **Census Bureau Staffing/Subject Matter Experts**

- Nicholas Jones – NAC
- Michael Hawes – CSAC

#### **External Subject Matter Expert**

- To be determined